a layer of optical material comprising a monomer and at least one polymerization initiator, and

means for controlling the extent of curing of the optical material by a radiation source at predetermined sub-regions inside said optical material to thereby produce a wavefront aberrator having a varied index of refraction.

2. (Amended) The system of claim 1, further comprising two transparent plates, said optical material being contained between said plates.

3. (Amended) The system of claim 2, further comprising a barrier between said plates confining said optical material within a predetermined volume.

A2 cont

4. (Amended) The system of claim 1, said radiation source comprising a LED array panel having a plurality of LED elements operatively disposed to irradiate said optical material.

5. (Amended) The system of claim 4, said means for controlling the extent of curing comprising a control unit controlling the emission intensity and irradiation duration of each of said LED elements in the LED array panel.

6. (Amended) The system of claim 5, said means for controlling the extent of curing comprising a de-magnifier operatively disposed to image a predetermined area of the LED array panel onto a predetermined area of the optical material.

7. (Amended) The system of claim 1, said radiation source emitting radiation having at least one wavelength within the absorption band of the polymerization initiator.

8. (Amended) The system of claim 7, said means for controlling the extent of curing comprising a spatial light intensity modulator operatively disposed to control the spatial distribution of the radiation emitted by said radiation source.

9. (Amended) The system of claim 8, the spatial light intensity modulator being selected from the group consisting of LCD array panel, photographic film, and film with a printed profile for transmitting the radiation.

10. (Amended) The system of claim 1, said radiation source comprising a laser unit operatively disposed to direct a laser beam at said predetermined sub-regions inside said optical material.

11. (Amended) The system of claim 10, said means for controlling the extent of curing comprising a beam scan unit scanning independently in two dimensions to thereby address said predetermined sub-regions inside said optical material.

2 A cont

12. (Amended) The system of claim 11, said means for controlling the extent of curing further comprising an intensity control for the laser unit.

13. (Amended) The system of claim 1, said means for controlling the extent of curing comprising a wavefront sensor operatively disposed to measure the radiation transmitted through the optical material.

14. (Amended) The system of claim 13, said means for controlling the extent of curing further comprising a computer in a feedback loop, said computer monitoring the radiation intensity and controlling the extent of curing by controlling the intensity and the duration of the radiation exposure.

15. (Amended) The system of claim 1, wherein said optical material comprises epoxy.

16. (Amended) The system of claim 2, wherein one of the transparent plates has refractive power selected from the group consisting of positive power with cylindrical power, positive power without cylindrical power, negative power with cylindrical power, negative power without cylindrical power, and combinations thereof.

17. (Amended) The system of claim 2, at least one of the plates being rigid.

18. (Amended) The system of claim 2, wherein the plate is comprised of a material which is removable by dissolving.

end A2

Please add new Claims 20-46 as follows:

A3

20. (New) A wavefront aberrator comprising:

a first transparent cover;

a second transparent cover; and

a layer of optical material comprising a resin positioned between said first transparent cover and said second transparent cover, said layer of optical material comprising at least a first subregion and at least a second subregion, the optical material in said first subregion having a different refractive index than the optical material in said second subregion.

21. (New) The wavefront aberrator of claim 20 in which said optical material in said first subregion is cured to a different extent than said second subregion.

22. (New) The wavefront aberrator of claim 20 in which said layer of optical material comprises an epoxy.

23. (New) The wavefront aberrator of claim 20 in which said layer of optical material comprises a light-curable resin.

24. (New) The wavefront aberrator of claim 20, said layer of optical material comprising a third subregion, the optical material in said third subregion having a different refractive index from at least one of said first subregion and said second subregion.

25. (New) The wavefront aberrator of claim 20 in which at least one of said first transparent cover and said second transparent cover is a lens.

26. (New) A method for making a wavefront aberrator, comprising:

providing a layer of optical material comprising a light curable resin, said layer of optical material being sandwiched between an upper transparent cover and a lower transparent cover and comprising at least a first subregion and at least a second subregion;

curing said first subregion to a different extent than said second subregion by selectively exposing said optical material to a radiation source.

27. (New) The method of claim 26 in which said radiation source comprises a LED array panel having a plurality of LED elements, each of said LED elements having an intensity or a period of illumination, or both, that are controlled to accomplish said curing.

A3 cont

28. (New) The method of claim 27 in which said LED array is controlled by a computer.

29. (New) The method of claim 28 which further comprises measuring an image transmitted through said optical material with a sensor, said sensor having an output signal, and sending said output signal to said computer.

30. (New) The method of claim 26 further comprising interposing a spatial light intensity modulator between said radiation source and said optical material, generating a curing pattern, and projecting said curing pattern onto said optical material.

31. (New) The method of claim 30 in which said radiation source is a constant fluence light.

32. (New) The method of Claim 30 in which the spatial light intensity modulator comprises a computer-controlled LCD.

33. (New) The method of claim 26 in which said radiation source is a laser.

34. (New) The method of claim 33 in which said laser generates a laser beam having an intensity that is varied as said laser beam is rastered across said optical material to accomplish said curing.

35. (New) The method of claim 33 in which said laser is controlled by a computer.

36. (New) The method of claim 35 which further comprises measuring an image transmitted through said optical material with a sensor, said sensor having an output signal, and sending said output signal to said computer.

37. (New) The method of claim 36 in which said sensor is selected from the group consisting of intensity imager and wavefront sensor.

A3 cont

38. (New) A system for making a wavefront aberrator, comprising:

a layer of optical material comprising a light-curable resin,

a radiation source comprising a LED array panel having a plurality of LED elements operatively disposed to irradiate said optical material; and

a control unit for controlling the extent of curing of the optical material by said radiation source at predetermined sub-regions inside said optical material to thereby produce an wavefront aberrator having a varied index of refraction.

39. (New) A system for making a wavefront aberrator, comprising:

a layer of optical material comprising a light-curable resin,

a radiation source comprising a laser unit operatively disposed to irradiate said optical material; and

a beam scan unit for controlling the extent of curing of said optical material by said radiation source at predetermined sub-regions inside said optical material to thereby produce a wavefront aberrator having a varied index of refraction.

40. (New) The system of claim 39, further comprising a radiation intensity monitor unit operatively disposed to measure the radiation transmitted through the optical material.

41. (New) The system of claim 40, further comprising a computer in a feedback loop, said computer capable of receiving input from said radiation intensity monitor unit and controlling the extent of curing by controlling said beam scan unit.

42. (New) A system for making a wavefront aberrator, comprising:

a layer of optical material comprising a light-curable resin,

a constant fluence radiation source; and

a spatial light intensity modulator interposed between said radiation source and said optical material, said spatial light intensity modulator being capable of generating a curing pattern for controlling the extent of curing of said optical material by said constant fluence radiation source at predetermined sub-regions inside said optical material to thereby produce a wavefront aberrator having a varied index of refraction.

43. (New) The system of claim 42 in which said spatial light intensity modulator comprises a computer-controlled LCD.

44. (New) The system of claim 42 further comprising a sensor, said sensor being capable of measuring an image transmitted through said optical material.

45. (New) The system of claim 44 further comprising a computer, said sensor being capable of producing an output signal that is capable of being processed by said computer.

46. (New) The system of claim 2, at least one of the plates being flexible.